

REMARKS

Claims 1-26 are pending in the present application. The Examiner has rejected claims 1-26.

Rejection Under 35 U.S.C. § 103(a) With Respect To Claims 1-26

Claims 1-26 stand rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 5,983,082 ("Hilbert") in view of U.S. Patent No. 6,633,550 B1 ("Gardenfors"). Applicants respectfully traverse the rejection.

Improperly Combining References

M.P.E.P. § 2145(X)(D)(2) clearly states that "[i]t is improper to combine references where the references teach away from their combination." Applicants respectfully submit that Hilbert and Gardenfors were improperly combined.

Hilbert Teaches Away From Gardenfors

Hilbert and Gardenfors were improperly combined because they teach away from each other. Hilbert teaches that "[t]o circumvent the drawbacks of a heterodyne architecture, a direct conversion architecture is employed. In a direct conversion architecture, there is no IF." Col. 2, lines 18-20 of Hilbert (underlining added for emphasis). Thus, Hilbert teaches away from any heterodyne architecture and teaches a direct conversion architecture in which there is no intermediate frequency (IF). On the other hand, Gardenfors does not teach a direct conversion architecture in which there is no intermediate frequency (IF). Gardenfors teaches away from Hilbert by employing "a heterodyne architecture with a relatively low IF". See, e.g., col. 1, lines 47-48 (in "Summary of the Invention" section); and col. 7, lines 48-49 of Gardenfors (underlining added for emphasis).

Hilbert entirely teaches away from a heterodyne architecture using an IF in a radio communication system. For example, at col. 2, lines 12-20, Hilbert teaches that

... [a] drawback to the heterodyne architecture is that the conversion to an IF requires extra circuit complexity, more power consumption, and more physical space. The filters used are usually ceramic filters or surface acoustic wave (SAW) filters, which are both expensive and physically large.

To circumvent the drawbacks of a heterodyne architecture, a direct conversion architecture is employed. In a direct conversion architecture, there is no IF.

In another example, at col. 7, lines 13-17, Hilbert teaches that

[i]n the direct conversion receiver, the modulated receive signal detected at antenna 301 is not first converted to an IF signal. Directly converting the modulated receive signal to a baseband signal thereby circumvents the need for costly, physically large IF filters.

In yet another example, at col. 8, lines 42-46, Hilbert teaches that

[t]he transmit baseband signals are not converted to an IF signal before ultimately being transmitted from antenna 301. Directly converting the transmit baseband signals to the transmit electromagnetic signal frequency circumvents the need for costly, physically large IF filters.

Thus, Hilbert teaches away from Gardenfors, thereby teaching away from the combination of Hilbert with Gardenfors. See, e.g., M.P.E.P. § 2145(X)(D)(2). Accordingly, Hilbert cannot be properly combined with Gardenfors.

Gardenfors Teaches Away From Hilbert

Not only does Hilbert teach away from Gardenfors, but Gardenfors teaches away from Hilbert. Gardenfors rejects the direct conversion architecture espoused by Hilbert.

... a second problem occurs with this approach, which is referred to as a "homodyne" or "zero-IF" architecture.

A so-called "DC offset" problem occurs with a zero-IF architecture, because the signal being processed is mapped directly to DC. Consequently, interference at DC is indistinguishable from the desired signal and cannot be filtered out. This problem also places more stringent requirements on the even order intermodulation characteristics of the receiver. Part of the DC offset can be removed with additional signal processing, but this approach increases circuit complexity and the power consumption of the IC.

Col. 4, lines 9-20 of Gardenfors. Thus, Gardenfors teaches away from direct conversion architecture of Hilbert emphasizing the DC offset problem with its detrimental effects with respect to DC and intermodulation interference. Gardenfors also disparages possible solutions to the cited problem as increasing circuit complexity and power consumption.

Thus, Gardenfors teaches away from Hilbert, thereby teaching away from the combination of Gardenfors with Hilbert. See, e.g., M.P.E.P. § 2145(X)(D)(2). Accordingly, Gardenfors cannot be properly combined with Hilbert.

Prima Facie Case of Obviousness

M.P.E.P. § 2142 states that

[t]he examiner bears the initial burden of factually supporting any prima facie conclusion of obviousness. If the examiner does not produce a prima facie case, the applicant is under no obligation to submit evidence of nonobviousness.

Applicants respectfully submit that, for at least the above reasons, a prima facie case of obviousness has not been presented. Accordingly, Applicants are under no obligation to submit evidence of nonobviousness. Nevertheless, in perusing the Office Action, Applicants respectfully submit that the Office Action is, in many cases unclear, as to how Gardenfors makes up for the teaching deficiencies of Hilbert with respect to the claims.

For example, with respect to claims 1-7, the Office Action states that "Hilbert does not specifically disclose a capacitor coupled across the power input and the power return; and a first resistor having a first end coupled to the power input and a second end to coupled to a power source". Office Action at page 2, section 2. However, in describing the teachings of Gardenfors, the Office Action does not even mention, for example, a capacitor or a resistor as set forth in claims 1-7 or how Gardenfors teaches each and every element that Hilbert admittedly does not teach.

In another example, with respect to claims 8-16, the Office Action states that "Hilbert does not specifically disclose an isolation means for isolating the charge means from a power source". Office Action at page 4, section 2. However, in describing the teachings of Gardenfors, the Office Action does not even mention, for example, isolation means as set forth in claims 8-16 or how Gardenfors teaches each and every element that Hilbert admittedly does not teach.

In another example, with respect to claims 17-19, the Office Action states that "Hilbert does not specifically disclose the features of circulating charge between the differential outputs through the capacitor; compensating for loss of the charge on the capacitor during the circulation of charge by recharging the capacitor through the resistor". Office Action at page 5, section 2. However, in describing the teachings of Gardenfors, the Office Action does not even mention,

for example, a capacitor or a resistor as set forth in claims 17-19 or how Gardenfors teaches each and every element that Hilbert admittedly does not teach.

In yet another example, with respect to claims 20-22, the Office Action states that "Hilbert does not specifically disclose an inductor having a first end coupled to the power input and a second end to couple to a power source; and a second inductor having a first end coupled to the power return and a second end to coupled to a power source return". Office Action at page 7, section 2. However, in describing the teachings of Gardenfors, the Office Action does not even mention, for example, an inductor, a power input, power return or a power source return as set forth in claims 20-22 or how Gardenfors teaches each and every element that Hilbert admittedly does not teach.

In yet still another example, with respect to claims 23-26, the Office Action states that "Hilbert does not specifically disclose a current source having an output coupled to the differential circuit, an input, and a capacitor shunting the input". Office Action at page 8, section 2. However, in describing the teachings of Gardenfors, the Office Action does not even mention, for example, a current source or a capacitor as set forth in claims 23-26 or how Gardenfors teaches each and every element that Hilbert admittedly does not teach.

For at least the above reasons, Applicants respectfully submit that a prima facie case of obviousness has not been presented with respect to claims 1-26.

Applicants respectfully request that any subsequent office action, if necessary, explain, with greater emphasis on the recited elements of the claims, how the cited references teach or suggest each and every element as set forth in the claims.

CONCLUSION


Since Hilbert cannot be properly combined with Gardenfors and since a prima facie case of obviousness has not been presented, the obviousness rejection of claims 1-26 cannot be maintained.

In view of at least the foregoing, it is respectfully submitted that the pending claims 1-26 are in condition for allowance. Should anything remain in order to place the present application in condition for allowance, the Examiner is kindly invited to contact the undersigned at the below-listed telephone number.

Please charge any required fees not paid herewith or credit any overpayment to the Deposit Account of McAndrews, Held & Malloy, Ltd., Account No. 13-0017.

Dated: April 28, 2004

Respectfully submitted,


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